

REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended claim 1 to recite a pattern ink layer partially formed on the substrate, and to recite that the surface protective layer is present on and “in direct contact” with the pattern ink layer, so as to cover a whole surface including both a region where the pattern ink layer is formed and a region where no pattern ink layer is formed. Claim 1 has been further amended to recite that the surface protective layer is provided therein with a first region which is located in a portion just above the pattern ink layer and in the vicinity of this portion, and with a second region, the first region having a lower gloss than second region, the pattern ink layer serving to generate a difference in gloss between the first and second regions. Note, for example, pages 19-24 of Applicants’ specification. Claim 2 has been amended to recite that the surface protective layer is present on and “in direct contact” with the pattern ink layer. Claim 2 has been further amended to recite that the pattern ink layer serves to generate a difference in gloss between the region where the pattern ink layer is formed and the region where no pattern ink layer is formed. The remaining claims in the application have been amended in light of amendments to claims 1 and 2.

In addition, claim 6 has been amended to recite that the pattern ink layer has first and second film regions, the second film region having a relatively small thickness as compared to the thickness of the first film region, with a portion just above and in the vicinity of the first film region being a first sub-region and a portion just above and in the vicinity of the second film region being a second sub-region having a relatively high

gloss as compared to the gloss of the first sub-region. Claims 11 and 22 have been amended to recite that the ionizing radiation-curable resin composition contains an ethylene oxide-modified polymerizable compound. Claim 18 has been amended to recite that the pattern layer has a woodgrain pattern, with the pattern ink layer forming a region corresponding to vessels of the woodgrain pattern.

The objection to claim 11 as set forth in Item 1 on page 2 of the Office Action dated June 22, 2007, is noted. See also previously considered claim 22. Claims 11 and 22 have been amended to recite an “ethylene oxide-modified” polymerizable compound. In view thereof, it is respectfully submitted that the objection to claim 11 is moot, and the required correction has been made.

The rejection of claims 1-28 under the second paragraph of 35 USC 112, as being indefinite, set forth in Item 2 on page 2 of the Office Action dated June 22, 2007, is noted. It is respectfully submitted that in view of present amendments to the claims, the various bases for the rejection under the second paragraph of 35 USC 112 are moot. Thus, the claims recite relative gloss and relative thicknesses, of various regions/layers of the claimed structure. It is respectfully submitted that such relative glosses and thicknesses are sufficiently definite such that one of ordinary skill in the art would know whether any specific decorative material fell within or outside the scope of the present claims. Under the present circumstances, it is respectfully submitted that this is sufficient for satisfying requirements of the second paragraph of 35 USC 112. See In re Moore, 169 USPQ 236 (CCPA 1971).

In addition, Applicants have amended the present claims to recite a pattern ink layer, rather than a low-luster pattern ink layer; accordingly, basis for rejection of the claims under the second paragraph of 35 USC 112, due to recitation of a “low-luster” pattern ink layer, is moot.

Applicants respectfully traverse the conclusion by the Examiner, in connection with claim 7, that it is not clear as to what is intended by “plus-side value of a maximum thickness”. In connection therewith, attention is respectfully directed to page 33, lines 12-25, of Applicants’ specification, together with Fig. 9 (note also paragraph [0101] on page 10 of the published application of the above-identified application, that is, No. 2007/0116933). It is respectfully submitted that this provides a sufficient definition of what is meant by “close to a plus-side value of a maximum thickness of the surface protective layer located just above the pattern ink layer”, so as to satisfy the requirements of the second paragraph of 35 USC 112 in connection therewith.

It is respectfully submitted that claim 18, particularly as presently amended, is sufficiently definite so as to satisfy requirements of the second paragraph of 35 USC 112, with respect to the woodgrain pattern recited in claim 18. Thus, it is noted that a woodgrain pattern has a vessel-type structure, and it is respectfully submitted that claim 18 is clear as to the pattern ink layer forming a region corresponding to the vessel-like structure of the woodgrain pattern.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the prior art applied by the Examiner in rejecting claims in the Office Action dated June 22, 2007, that is, the

teachings of the U.S. patents to Takahashi, No. 6,326,074, to Takeuchi, et al., No. 6,558,799, to Tsukada, et al., No. 5,296,340, to Ogawa, et al., No. 5,266,397, and to Klun, et al., No. 4,855,184, under the provisions of 35 USC 102 and 35 USC 103.

It is respectfully submitted that these references as applied by the Examiner would have neither taught nor would have suggested such a decorative material as in the present claims, including, inter alia, the pattern ink layer partially formed on the substrate and a surface protective layer which is present on and in direct contact with the pattern ink layer so as to cover a whole surface including both a region where a pattern ink layer is formed and a region where no pattern ink layer is formed, and with the surface protective layer being provided with a first region located in a portion just above the pattern ink layer and in the vicinity of this portion and with a second region, the first region having a lower gloss than the second region, the pattern ink layer serving to generate a difference in gloss between the first and second regions, the first region being visually recognized as a concave portion. See claim 1.

In addition, it is respectfully submitted that these references would have neither taught nor would have suggested such a decorative material as in the present claims, having the pattern ink layer partially formed on the substrate and a surface protective layer present on and in direct contact with the pattern ink layer so as to cover a whole surface including regions where the pattern ink layer is formed and where no pattern ink layer is formed, the pattern ink layer serving to generate a difference in gloss between the region where the pattern ink layer is formed and the region where no pattern ink layer is formed, the pattern ink forming the pattern ink layer containing a non-

crosslinked urethane resin as a binder and the ionizing radiation-curable resin composition containing a (meth)acrylate monomer. See claim 2.

Furthermore, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such decorative material as in the present claims, having features as discussed previously, and, moreover, wherein the pattern ink forming the pattern ink layer contains the non-crosslinked urethane resin and an unsaturated polyester resin as a binder (see claim 3); and/or wherein the ionizing radiation-curable resin composition contains a (meth)acrylate monomer solely (see claim 4); and/or wherein the pattern ink forming the pattern ink layer has a uneven thickness as in claim 5, particularly forming regions of relative gloss as in claim 6; and/or wherein the surface protective layer contains fine particles, an average particle size of the fine particles being that set forth in claims 7 and 21, in particular, that set forth in claims 8 and 9, with the amount of fine particles being that set forth in claim 10; and/or wherein the surface protective layer is formed by crosslinking and curing the ionizing radiation-curable resin composition containing ethylene oxide-modified polymerizable compound, and contains particles of baked kaolin, as in claims 11 and 22; and/or wherein a surface of the surface protective layer above the first region has a convex shape (note claims 14 and 25); and/or wherein the material further includes a penetration-preventing layer formed between the substrate and pattern ink layer, as in claims 15 and 26; and/or wherein the substrate is a penetrable substrate (see claim 16); and/or additional structure of the colored layer, pattern layer and penetration-preventing layer, as in claims 17 and 27; and/or specific

woodgrain pattern of the pattern layer as in claim 18; and/or the decorative plate comprising a substrate plate and the decorative material, as in claims 19 and 28.

The invention as presently being considered on the merits in the above-identified application is directed to a decorative material, provided on a surface thereof with a pattern which has a visual convexo-concave appearance due to a difference in gloss, the material being excellent in durability.

As described on pages 1-6 of Applicants' specification, various surface decorative plates, and decorative sheets thereof, used for furniture or cabinets, having a laminated structure in which a decorative sheet having, for example, a printed woodgrain pattern, is bonded onto a wood material, an inorganic material, a synthetic resin base material, etc., have been proposed. However, previously proposed decorative sheets, for such surface decorative plates, have various problems, including requirements of forming appropriate concave portions, providing portions having a satisfactory feel, requiring complicated processing and having high costs.

Against this background, and as a result of intensive research to provide a decorative material having a proper feel and good physical properties, including solvent and abrasion resistance and high laminar strength, the present inventors have found that the desired material can be formed by providing a specific pattern ink layer selectively on a substrate, with a surface protective layer being provided in direct contact with the pattern ink layer and covering a whole surface of a substrate including both a region where the pattern ink layer is formed and a region where the pattern ink layer is not formed, the surface protective layer being formed by crosslinking and curing

an ionizing radiation-curable resin composition, thereby providing a low-gloss region which is located in a portion just above the pattern ink layer and in the vicinity of the portion, this low-gloss region being visually recognized as a concave portion, other portions of the surface protective layer not having such low-gloss region. As described, for example, on page 13 of Applicants' specification, an outermost surface of the surface protective layer located above the low-gloss region may be raised up owing to formation of the pattern ink layer and forms a convex shape. However, with such convex shape present on a surface of the surface protective layer, light scattering occurs thereon due to increase of the surface area, and an angle of visibility for recognizing the low gloss is also widened, thereby emphasizing a visual convexo-concave feeling in cooperation with the effect of the low-gloss region 4 (see Fig. 1). \

To be emphasized is that the pattern ink layer acts in combination with the surface protective layer, in view of direct contact therebetween, to provide the low-gloss region achieving the appearance of the presently claimed decorative structure.

Note, in particular, pages 19-24 of Applicants' specification. As described therein, the pattern ink layer 3 (see Fig. 1) serves for generating the difference in gloss of the pattern; and that while the mechanism of generation of the difference in gloss of the pattern has not been clearly determined, it is suggested that resin components of the ink contained in the pattern ink layer and uncured ionizing radiation-curable resin are not completely compatibilized with each other but are kept in a suspended state and located in a portion just above the pattern ink layer, so that the suspended portion scatters light to form the low-gloss region. When the surface protective layer is

crosslinked and cured while maintaining the suspended state, such a suspended state is fixed, so that the low-gloss region 4 (see Fig. 1) is partially formed in the surface protective layer, and recognized as a concave portion due to optical illusion.

Moreover, by varying coating amount of the pattern ink layer, the pattern ink layer can have an uneven ink thickness, allowing the extent of the portion visually recognized as a concave portion to be stepwise or continuously changed; and, as a result, the decorative material can exhibit a gradation pattern with a difference in gloss which is changed stepwise, or a continuous pattern with the difference in gloss being changed continuously. See page 24, lines 8-19, of Applicants' specification.

According to the present invention, it is important that the pattern ink of the pattern ink layer and the material of the surface protective layer interact with each other, e.g., are in direct contact with each other. Note, for example, page 29, lines 13-19, of Applicants' specification.

In the statement of the rejection of claims on page 3 of the Office Action dated June 22, 2007, claims "11, 12-16 and 19" have been rejected. From the remainder of this rejection, it appears that claim 1, rather than claim 11, was rejected under 35 USC 102(b). Clarification of this rejection, if maintained upon further examination, is respectfully requested.

Takahashi discloses a synchronously embossed decorative sheet including, inter alia, a pattern layer provided on the substrate, a nonpenetrable layer provided on the pattern layer, in tune with the pattern in the pattern layer, the nonpenetrable layer comprising a coating composition being nonpenetrable by an ionizing radiation curing

resin; and a top coat layer provided so as to cover the layers on the substrate and to conform to the shape of concaves and convexes in the pattern layer. See column 2, lines 17-33. Note also column 2, lines 54-66. See, further, column 3, lines 1-3; and column 4, line 67, to column 5, line 3.

It is emphasized that in Takahashi the top coat layer is separated from the pattern layer, e.g., by the nonpenetrable layer. In, e.g., Fig. 2, the top coat 6 of Takahashi is further separated from the pattern layer by the penetrable layer 4. It is respectfully submitted that Takahashi would have neither taught nor would have suggested, and in fact would have taught away from, the presently claimed invention, including the surface protective layer in direct contact with the pattern ink layer, and advantages thereof as discussed in the foregoing.

The contention by the Examiner in the paragraph bridging pages 3 and 4 of the Office Action dated June 22, 2007, that in Takahashi the surface protective layer “is present on and contacted with the low-luster pattern ink layer”, is noted. Particularly as presently amended, and as discussed previously, it is respectfully submitted that in Takahashi the layer 6 is separated from, and not in direct contact with, the pattern ink layer.

It is respectfully submitted that the teachings of the additional references as applied by the Examiner would have not rectified the deficiencies of Takahashi, such that the presently claimed invention as a whole would have been obvious to one ordinary skill in the art.

Tsukada, et al. discloses a decorative sheet including a sheet having a transparent plastic first substrate sheet and a pattern-printed layer partially or wholly embedded in one or both of the surfaces of the first substrate sheet, a laminate sheet being formed by laminating a transparent plastic second substrate sheet on one surface of the above-mentioned sheet, and a sheet formed by laminating a plastic third substrate sheet having a concealing effect on one surface of the above-mentioned sheet or laminate sheet. See column 1, lines 31-42. Note also column 2, lines 3-8. See, further, column 6, lines 53-55.

Even assuming, arguendo, that the teachings of Tsukada, et al. were properly combinable with the teachings of Takahashi, such combined teachings would have neither disclosed nor would have suggested the present invention, including the layers in direct contact, achieving the effect as in the present claims. Again, it is emphasized that by having the surface protective layer in direct contact with the pattern ink layer, the layers made of materials as in various of the present claims (e.g., see claim 2), the low-gloss regions are provided providing the beneficial visual effect of the present claims. It is respectfully submitted that the combined teachings of references as applied by the Examiner do not disclose, nor would have suggested, such effect achieved in combination, and advantages thereof.

Ogawa, et al. discloses an amorphous silica filler, which exhibits excellent handling properties and processability, and which, when added to a resin film, exhibits excellent dispersing properties, transparency and anti-blocking property, the amorphous silica filler being described, for example, in column 2, lines 33-45. As for properties of

the amorphous silica filler, note column 3, lines 54-65, of this patent. See also the paragraph bridging columns 3 and 4 of this patent, as well as column 7, lines 17-34.

Even assuming, arguendo, that the teachings of Ogawa, et al. were properly combinable with the combined teachings of Takahashi and of Tsukada, et al., as applied by the Examiner, such combined teachings would have neither disclosed nor would have suggested the presently claimed decorative material, including, inter alia, wherein the surface protective layer and the pattern ink layer are in direct contact with each other, with, e.g., interaction therebetween providing various advantages achieved by the present invention.

It is respectfully submitted that the additional teachings of Klun, et al., as applied by the Examiner, even in combination with teachings of the other references as applied by the Examiner, would have neither disclosed nor would have suggested the presently claimed subject matter.

Klun, et al. discloses protective, organic coatings for wood and other substrates, the coatings being formed from radiation-curable thermoplastic coating compositions. The disclosed compositions include normally solid, organic solvent-soluble, thermoplastic, polyethylenically-unsaturated, cellulosic polyurethane polymers as described most generally in column 3, lines 27-61 of this patent. See also the paragraph bridging columns 3 and 4 of this patent.

Even assuming, arguendo, that the teachings of Klun, et al. were properly combinable with the teachings of the other references as applied by the Examiner, it is respectfully submitted that such combined teachings would have neither disclosed nor

would have suggested, and in fact would have taught away from, the presently claimed invention, including the surface protective layer and pattern ink layer being in direct contact with each other, and advantages thereof.

It is respectfully submitted that the combination of teachings of references as applied by the Examiner on pages 9-12 of the Office Action dated June 22, 2007, including the teachings of U.S. Patent No. 6,558,799 to Takeuchi, et al. as primary reference, would have neither disclosed nor would have suggested the presently claimed invention.

Takeuchi, et al. discloses a decorative material for use, for example, in surface material including decorative sheets, the decorative material including a substrate having at least on its surface an active hydrogen-containing polar functional group; and, provided on the substrate, a two-component cured urethane resin layer and a surface resin layer of a crosslinked coating formed from an ionizing radiation curable acrylate resin, the two-component cured urethane resin layer having a structure of at least three layers of a first resin layer, a second resin layer, and a third resin layer provided in that order from the substrate side, the crosslinking density of the second resin layer being lower than that of the first resin layer and that of the third resin layer. See column 2, lines 13-25. Note also column 2, lines 26-31. This patent goes on to disclose that at least one of the at least three layers constituting the two-component cured urethane resin layer may function as a decorative layer. See column 3, lines 48-53. Note also column 4, lines 31-36.

Takahashi has been previously discussed.

It is emphasized that in Takeuchi, et al., the layer 2C, in contact with the surface resin layer 3, is described as having a relatively high crosslinking density, and is not disclosed as a patterned layer partially (selectively) provided on the substrate. It is respectfully submitted that the teachings of Takeuchi, et al., even in combination with the teachings of Takahashi, would have neither taught nor would have suggested the pattern ink layer partially formed on the substrate, in direct contact with the surface protective layer, as in the present invention, and advantages thereof, particularly with such pattern ink layer generating the low-gloss region, as in the present claims.

It is respectfully submitted that the additional teachings of Takahashi as applied by the Examiner on pages 9 and 10 of the Office Action dated June 22, 2007, and further teachings of Tsukada, et al., as applied on pages 10-12 of this Office Action mailed June 22, 2007, would not have rectified the deficiencies of Takeuchi, et al., such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

The teachings of Takahashi and of Tsukada, et al., have been previously discussed.

Even combining the teachings of Takahashi with the teachings of Takeuchi, et al., and even further in view of the teachings of Tsukada, et al., such combined teachings would have neither disclosed nor would have suggested the presently claimed invention, including the pattern ink layer partially formed on the substrate, in direct contact with the surface protective layer, with the pattern ink layer serving to generate the difference in gloss in the surface protective layer above the pattern ink

layer and above other portions of the substrate; and/or materials of the pattern ink layer and of the surface protective layer providing interactions achieving relative gloss as in the present invention; and/or other features of the present invention as in dependent claims, and advantages of the present invention.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

To the extent necessary, Applicants hereby petition for an extension of time under 37 CFR 1.136. Kindly charge any shortage of fees due in connection with the filing of this paper, including any extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Account No. 01-2135 (case 396.46088X00), and please credit any overpayments to such Deposit Account.

Respectfully submitted,

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